

Name: _____

Date: _____

s17 Geometric Series Exam (Example v100)

Question 1

Consider the partial geometric series represented below with first term $a = 476$, common ratio $r = \left(\frac{19}{34}\right)^{1/10}$, and $n = 10$ terms.

$$S = 476 + 449.09 + 423.7 + 399.75 + 377.15 + 355.83 + 335.72 + 316.74 + 298.83 + 281.94$$

We can multiply both sides by r .

$$rS = 449.09 + 423.7 + 399.75 + 377.15 + 355.83 + 335.72 + 316.74 + 298.83 + 281.94 + 266$$

What is the value of $S - rS$?

Question 2

Consider the geometric series shown below, using ellipsis notation to indicate a continuation of the pattern without writing every term.

$$S = 4 + 4(5) + 4(5)^2 + 4(5)^3 + \cdots + 4(5)^{47} + 4(5)^{48} + 4(5)^{49} + 4(5)^{50}$$

Identify the initial term, the common ratio, and the number of terms.

Question 3

Write a proof for the partial geometric series formula.

- a. Define the variables.
- b. Write the sum using variables and ellipsis notation. You can implicitly assume the number of terms is more than the number of terms you choose to write.
- c. Using annotated algebraic manipulation, produce the partial geometric series formula.